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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,962	01/22/2004	Robert D. Huttemann	HUTTEMANN 9-2	6344
27964	7590	01/03/2005	EXAMINER	
HITT GAINES P.C. P.O. BOX 832570 RICHARDSON, TX 75083			OWENS, DOUGLAS W	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 01/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/762,962	Applicant(s) HUTTEMANN ET AL.	
	Examiner Douglas W. Owens	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 25-37 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/22/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 25, 26, 30 and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,194,775 to Usami.

Regarding claim 25, Usami teaches an integrated circuit (Fig. 3, for example), comprising:

transistors (5, 3, 4);

interconnects formed in dielectric layers (9, 10) located over the transistors that interconnect the transistors to form an operative integrated circuit; and

a thin film resistor device (6, 7) interconnected to the transistors, including:

a resistive layer (7) located on a first dielectric layer (2);

first and second contact pads (6) located on the resistive layer (Note: the word “on” is taken as a function word to indicate “in contact with”, particularly with respect to the contact pads located “on” a side portion of the resistive layer (See Merriam-Webster’s Collegiate Dictionary)); and

a second dielectric layer (10, located over the resistive layer and the first and second contact pads.

Regarding claim 26, Usami teaches an integrated circuit, further including a first and second interconnect (11, 12) that contacts the first and second contact pads respectively.

Regarding claim 30, Usami teaches a thin film resistor, wherein the first and second interconnects comprise aluminum (Col. 2, lines 13 – 19).

Regarding claim 37, with respect to using the transistor as part of a CMOS, BJT, or BiCMOS device, this is considered a suggested use limitation and has not been given any patentable weight (See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963)).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 29 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usami.

Regarding claim 29, Usami teaches a thin film resistor, wherein the first and second contact pads have a width that is greater than that of the first and second interconnects. Usami does not teach that the contact pads are about 3000 nm greater than a width of the first and second interconnects. The width of the interconnects has a

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direct effect on the resistivity of the interconnects. It would have been obvious to one having ordinary skill in the art to arrive at the optimal thickness of the interconnects through routine experimentation, since it is desirable to achieve design resistances of the device. It has been held that optimization of a result effective variable only requires ordinary skill in the art.

Regarding claim 36, Usami does not teach a thin film resistor, wherein the resistive layer has a thickness ranging from 20 nm to 80 nm. It is known in the art to vary the thickness of resistive layers since it has a direct affect on the resistivity. It would have been obvious to one having ordinary skill in the art to adjust the thickness of the resistor, since it is desirable to achieve the desired resistance. Additionally, it has been held that optimization of a result effective variable only requires ordinary skill in the art.

5. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Usami as applied to claims 26 and 30 above, and further in view of US Patent No. 6,424,040 to Nag et al.

Usami teaches an integrated circuit, wherein the interconnects comprise aluminum. Usami does not teach an integrated circuit, wherein the interconnects comprise a Ti/TiN/Al/TiN stack. Nag et al. teach an integrated circuit, wherein a typical interconnect comprises a Ti/TiN/Al/TiN stack (Col. 1, lines 25 – 28). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Nag et al. into the device taught by Usami, since it is

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desirable to prevent unwanted diffusion of Al, as well as provide an adhesion layer for the TiN barrier layer.

6. Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usami as applied to claim 25 above, and further in view of US Patent No.

4,161,431 to Matsunaga et al.

Usami does not teach an integrated circuit, wherein the resistive layer includes tantalum nitride and tantalum pentoxide. Matshunaga et al. teach an integrated circuit, wherein the resistive layer includes tantalum nitride and tantalum pentoxide (Col. 3, lines 47 – 51). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Matshunaga et al. into the device taught by Usami, since it is desirable to use materials that are well suited for the intended use. The selection of a known material based on its suitability for its intended use supported a *prima facie* obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 25 – 37 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 – 10 and 21 of U.S. Patent No. 6,703,666. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims are nearly identical, with the few exceptions being noted below.

Regarding claim 25, claims 1 and 21 of the patent recites each limitation thereof except for the explicit requirement of the interconnects being over the transistors. It would have been obvious for one having ordinary skill to form the interconnects over the transistors, since the transistors are formed in the substrate, as is known in the art, and interconnect structures must extend from the substrate to the overlying structures, such as thin film resistors.

Regarding claim 26, claim 1 of the patent recites this limitation.

Regarding claim 27, claim 1 of the patent recites this limitation.

Regarding claim 28, claim 2 of the patent recites this limitation.

Regarding claim 29, claim 3 of the patent recites this limitation.

Regarding claim 30, claim 4 of the patent recites this limitation.

Regarding claim 31, claim 5 of the patent recites this limitation.

Regarding claim 32, claim 6 of the patent recites this limitation.

Regarding claim 33, claim 7 of the patent recites this limitation.

Regarding claim 34, claim 8 of the patent recites this limitation.

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Regarding claim 35, claim 9 of the patent recites this limitation.

Regarding claim 36, claim 10 of the patent recites this limitation.

Regarding claim 37, with respect to using the transistor as part of a CMOS, BJT, or BiCMOS device, this is considered a suggested use limitation and has not been given any patentable weight (See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963)).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Douglas W Owens
Examiner
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